

Notice of Allowability

Application No.

10/758,027

Applicant(s)

KIM ET AL.

Examiner

Leon Flores

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/29/2007.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DAVID C. PAYNE

SUPERVISORY PATENT EXAMINER

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-17 are allowed.
2. The following is an examiner's statement of reasons for allowance: The art of record does not suggest the respective claim combination together and nor would the respective claim combinations be obvious with:

Re claim 1, the further limitation of, *"a method of updating a tap coefficient of a channel equalizer, comprising: determining whether or not an error of the channel equalizer converges within a range of a threshold of visibility; and updating the tap coefficient of the channel equalizer using a least-mean-square (LMS) algorithm embodied in a circuit for performing the LMS algorithm: when the error converges within the range of the threshold of visibility; or when the error does not converge within the range of the threshold of visibility and a control signal is in a first state; or updating the tap coefficient of the channel equalizer using a Kalman algorithm embodied in a circuit for performing the Kalman algorithm: when the error does not converge within the range of the threshold of visibility and the control signal is in a second state; wherein the circuit for performing the LMS algorithm is part of the circuit for performing the Kalman algorithm"*.

Claims 2-7 depend on claim 1 above.

Re claim 8, the further limitation of, *"a circuit for updating a tap coefficient of a channel equalizer, comprising: a convergence examining and comparing (CEC) unit arranged and configured to determine if an error of the channel equalizer converges within a range of a threshold of visibility; a decoder arranged and configured to receive a control*

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signal and an output signal of the CEC unit and to produce a decoder output signal; and an updating circuit arranged and configured to update the tap coefficient of the channel equalizer; wherein the updating circuit updates the tap coefficient using a least-mean-square (LMS) algorithm when the error converges within the range of the threshold of visibility or when the error does not converge within the range of the threshold of visibility and a control the decoder signal is in a first state, and wherein the updating circuit updates the tap coefficient using a Kalman algorithm when the error does not converge within the range of the threshold of visibility and the decoder signal is in a second state". Claims 9-11 depend on claim 8 above.

Re claim 12, the further limitation of, "a circuit for updating a tap coefficient of a channel equalizer comprising: the channel equalizer arranged and configured to produce a channel equalizer output signal; a slicer arranged and configured to determine a certain value corresponding to the channel equalizer output signal and to generate a slicer output signal corresponding to the certain value; a selection circuit arranged and configured to receive a control signal, the slicer output signal and a training signal, and, in response to the control signal, to output the slicer output signal or the training signal as a selection circuit output signal; a subtracter arranged and configured to subtract the channel equalizer output signal from the selection circuit output signal and to generate an error output signal; a convergence examining and comparing (CEC) unit arranged and configured to compare a range of a threshold of visibility with the error output signal and to generate a first CEC output signal when the error output signal converges within the range of the threshold of visibility or a second CEC output signal when the error

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output signal does not converge within the range of the threshold of visibility; a decoder arranged and configured to receive the control signal and the output signal of the CEC unit and to produce a decoder output signal; and an updating circuit arranged and configured to update the tap coefficient of the channel equalizer in response to the decoder output signal; wherein the updating circuit updates the tap coefficient of the channel equalizer- using a LMS algorithm when the decoder output signal is in a first state; and using a Kalman algorithm when the decoder output signal is in a second state". Claims 13-15 depend on claim 12 above.

Re claim 16, the further limitation of, *"a circuit for updating a tap coefficient of a channel equalizer, comprising: the channel equalizer arranged and configured to produce a channel equalizer output signal; means for generating a determination signal corresponding to a value of the channel equalizer output signal; means for receiving a control signal, the determination signal, and a training signal and for selectively outputting the determination signal or the training signal; means for generating an error signal; means for comparing the error signal to a threshold of visibility and for generating a comparator output signal; means for receiving the control signal and the comparator output signal and for producing a decoder output signal; and means for selectively updating the tap coefficient using a least-mean-square (LMS) algorithm or a Kalman algorithm based on the decoder output signal". Claim 17 depends on claim 16 above.*

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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September 13, 2007


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER